



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,790	02/26/2004	Miguel Isenberg	20910/0206100-US0	6138
62663	7590	07/25/2007		
Sun Microsystems, Inc. c/o DARBY & DARBY P.C. P.O. BOX 770 Church Street Station NEW YORK, NY 10008-0770			EXAMINER CAO, DIEM K	
			ART UNIT	PAPER NUMBER
			2194	
			MAIL DATE	DELIVERY MODE
			07/25/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/788,790

Applicant(s)

ISENBERG ET AL.

Examiner

Diem K. Cao

Art Unit

2194

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.


## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
WILLIAM THOMSON  
SENIOR PATENT EXAMINER  
TECHNOLOGY CENTER 2100

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 2/26/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Claims 1-25 are presented for examination.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-2, 4-14 and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lucovsky et al. (U.S. 6,223,207 B1) in view of Sievert et al. (U.S. 6,687,729 B1).**

As to claim 1, Lucovsky teaches in a computer system, a method for alerting one or more computer software application threads waiting to retrieve events from an event port (abstract), the method comprising:

- receiving, at the event port, an alert event generated by a computer software application (When an I/O request is completed, the completed information is routed ... completion port object 62; col. 10, lines 4-7);
- the event port will be signaled in response to receiving the alert event (When an asynchronous I/O completion is received ... be signaled; col. 13, lines 4-8); and

Art Unit: 2194

- notifying one or more of the computer software application threads about the alert event of the event port (If there are threads waiting on the port, the executive ... packet; col. 13, lines 8-11).

Lucosvky does not teach changing a state of the event port to an alert state, if the event port is not already in an alert state, in response to receiving the alert event. However, Sievert teaches a queue can be in different states, for example, stopped state, suspended state, and running state (col. 5, lines 39-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply and modified the teaching of Sievert to the system of Lucosvky because Lucosvky provides a method/system for managing a pool of threads for executing queued items of work, thus, alternative method can be applied to the system of Lucosvky to use states for the event port/queue instead just signaled the event port.

As to claim 2, Lucosvky teaches

- retrieving the alert event from the event port with the notified one or more computer software application threads (receive notification ... service; col. 13, lines 37-40), and
- returning each computer software application thread to its respective computer software application with the retrieved alert event (Periodically, a thread may stop ... switch back to the original thread; col. 7, lines 56-67).

As to claim 4, Lucosvky does not teach changing the event port from the alert state to a normal state. However, Sievert teaches the event queue's state can be changed between stopped

Art Unit: 2194

state, suspended state, and running state (col. 5, lines 39-50). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Sievert to the system of Lucosvky and modify it have alert and normal state for the event port, thus provide a different method to queue and retrieve completion event.

As to claim 5, Lucosvky does not explicitly teach generating an error message if the event port cannot be changed to the normal state. However, Lucosvky teaches error messages can be generated in the process of creating the event port, reading the event port, or when access the event port (col. 12, lines 44-64 and col. 13, lines 46-55). It would have been obvious to one of ordinary skill in the art that error message would also be generated if the event port cannot be changed to different state.

As to claim 6, Lucosvky does not explicitly generating an error message if the event port cannot be changed to the alert state. However, Lucosvky teaches error messages can be generated in the process of creating the event port, reading the event port, or when access the event port (col. 12, lines 44-64 and col. 13, lines 46-55). It would have been obvious to one of ordinary skill in the art that error message would also be generated if the event port cannot be changed to different state.

As to claim 7, Lucosvky teaches wherein the error message is generated in response to detecting one or more of: an invalid port identifier, an event port argument not being an event

Art Unit: 2194

port file descriptor, an event port already being in alert mode, and mutually exclusive flags being set (col. 12, lines 44-64).

As to claim 8, Lucosvky teaches including in the alert event data about the cause of the alert (error indication; col. 13, line 64 – col. 14, line 1).

As to claim 9, Lucosvky teaches including in the alert event a reference to data about the cause of the alert (error indication, context associated with the particular I/O operation; col. 13, lines 64-67).

As to claim 10, Lucosvky teaches returning each computer software application thread to its respective computer software application with the retrieved alert event and information about the cause of the alert event (col. 13, line 37 – col. 14, line 4 and Periodically, a thread may stop ... switch back to the original thread; col. 7, lines 56-67).

As to claim 11, Lucosvky teaches wherein the alert event is generated in response to one or more of the following actions: a signal occurring, a synchronization request being issued, a task waiting to be performed, and a command being issued for terminating all ongoing processes (col. 13, lines 4-5).

As to claim 12, Lucosvky teaches wherein the event port has an associated event queue (the I/O completion port ... queue object; col. 9, lines 58-60), further comprising placing the

Art Unit: 2194

alert event in the event queue (When an I/O request ... port object 62; col. 10, lines 4-7), and keeping the alert event in the event queue until a request to remove the alert event is received (col. 10, lines 12-16).

As to claim 13, it is the same as the method of claim 1 except it is a computer program product, and is rejected under the same ground of rejection.

As to claims 14 and 16-24, see rejections of claims 2 and 4-12 above.

**4. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lucosvky et al. (U.S. 6,223,207 B1) in view of Sievert et al. (U.S. 6,687,729 B1) further in view of Brown et al. (U.S. 6,631,363 B1).**

As to claim 3, Lucosvky does not explicitly teach the alert event includes one or more flags, and changing includes determined whether the event port is in an alert state by checking one or more of the flags. However, Brown teaches alert event includes one or more flags (event types; col. 4, lines 50-67), including alert event (col. 5, lines 14-27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply and modify the teaching of Brown to the system of Lucosvky because Brown teaches a system that can handle multiple type of events at the same time, not only completion event.

As to claim 15, see rejection of claim 3 above.

**5. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lucosvky et al. (U.S. 6,223,207 B1) in view of Sievert et al. (U.S. 6,687,729 B1) further in view of Bhattacharya (Design Notes on Asynchronous I/O (aio) for Linux).**

As to claim 25, see rejections of claims 1 and 12 above. Lucosvky further teaches a request stack for holding requests to retrieve transaction events from the event queue (col. 10, lines 50-57). Lucosvky does not teach a request queue and each request having an associated priority determining a place of the request in the request queue. However, Bhattacharya teaches request queue, and each request having an associated priority determining a place of the request in the request queue (page 7, lines 1-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Bhattacharya to the system of Lucosvky because Bhattacharya teaches a method for the application to indicate some requests are lower priority than others, so the system can optimize system throughput and latency of other requests at the cost latency of such requests (page 6, last paragraph).

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diem K. Cao whose telephone number is (571) 272-3760. The examiner can normally be reached on Monday - Friday, 7:30AM - 3:30PM.



Art Unit: 2194

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Thomson can be reached on (571) 272-3718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DC  
July 19, 2007

  
**WILLIAM THOMSON**  
SUPERVISORY PATENT EXAMINER  
TECHNICAL CENTER 2100